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ABSTRACT

The National Institutes of Health (NIH) Library has developed a Web-based training program in response to feedback obtained from a customer survey on learning preferences. A majority of the participants surveyed preferred Web-based training over hands-on training, seminars, printed guides, and personal tutorials. Participants reported that they felt overwhelmed by the amount and complexity of information and that they did not need or want to know how to use all resources simultaneously, but would rather learn how to use a resource when the need arises. Taking these user requirements into consideration, the Library's Instruction Team designed and implemented Web tutorials to meet the users' desire for convenience and the ability to learn at their own pace from anywhere at anytime. Using a Web-authoring tool called ViewletBuilder, the team developed practical, task-specific animated demonstrations or viewlets that show a user how to use library-supported databases or software. Viewlets supplement animation with text balloons and notes explaining the actions to the viewer. Watching a viewlet is like watching a real-time demonstration with navigation buttons for the user to control the speed of the tutorial, allowing the viewer to work at his or her own pace. With Web-based training the NIH Library has been able to deliver a 24/7 learning solution that is both convenient and relevant to the users' information needs in a research environment. (Contains 18 references.) (Author/MES)

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E-Training: Meeting the Users on Their Terms

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E-Training: Meeting the Users on Their Terms

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ABSTRACT

The National Institutes of Health (NIH) Library has developed a web-based training program in response to feedback obtained from a customer survey on learning preferences. A majority (50%) of the participants surveyed preferred web-based training over hands-on training (18%), seminars (13%), printed guides (9%) and personal tutorials (9%). Participants reported that they felt overwhelmed by the amount and complexity of information, and specifically reported that they did not need or want to know how to use all resources simultaneously, but would rather learn how to use a resource when the need arises. Taking these user requirements into consideration, the Library's Instruction Team designed and implemented web tutorials to meet the users' expressed desire for convenience and the ability to learn at their own pace from anywhere at anytime. As a first step, the team investigated coursebuilding software and decided to use a web-authoring tool called ViewletBuilder. With ViewletBuilder, the team developed practical, task-specific animated demonstrations or "viewlets". The viewlets show a user how to use Library-supported databases or software such as Reference Manager, a popular bibliographic management package used by NIH researchers. Viewlets supplement animation with text balloons and notes explaining the actions to the viewer. Watching a viewlet is like watching a real-time demonstration with navigation buttons for the user to control the speed of the tutorial, allowing the viewer to work at his or her own pace. With web-based training the NIH Library has been able to deliver a 24/7 learning solution that is both convenient and relevant to the users' information needs in a research environment.

THE NEED FOR WEB-BASED TRAINING

The NIH Library has a longstanding reputation for and commitment to excellence in the NIH community. We have cultivated a good reputation among our users for providing much needed information, document delivery, electronic resources, and instruction in the use of electronic resources. As the NIH Library has developed an increasingly strong virtual presence with thousands of online journals, full-text books and databases, and library users are increasingly utilizing these electronic resources through the Library's web site, the NIH Library Instruction Team has recognized a growing need for web-based instruction as well.

In recent years the NIH Library Instruction Program has consisted of a twice-monthly day-long series of seminars that are offered in house. Our instruction program also includes personal or group tutorials that are offered to the user in their lab or office, or in the Library. We offer on and off-site training for large or small groups. Seminars include instruction in searching biomedical databases such as PubMed and Web of Science, using bibliographic management software such as EndNote and Reference Manager, and special interest classes such as PDA Resources and Nursing Resources.

A number of factors led us to the decision to offer web-based instruction in addition to seminars, tutorials and group presentations.

- Many NIH Library users are located in buildings that are not on the main campus. For these people web-based instruction would provide ease of access and save time traveling to the NIH Library. In meetings conducted with NIH Library user focus groups in May of 1999, off-site users said coming to the library was inconvenient. One participant in the focus groups put it succinctly, "Are classes online or do we have to walk in? Online is much more convenient."
- NIH staff surveyed also reported that they sometimes felt unable to keep up with or overwhelmed with the amount of new resources and the complexity of using them. They needed to be able to learn how to use a resource at their own "point of need". Access to training "on demand" from anywhere at anytime would offer our users training experiences that could be easily accessed for later reference.
- In a telephone survey of 400 NIH staff conducted in January of 2000, a question was included which asked NIH staff, "what is the best way for you to learn about electronic resources and how to use them effectively?" In the response, a majority, (49.8%) of the participants preferred web based instruction, 18% preferred hands-on instruction, 12.5% preferred seminars demonstrating a resource, 9.8% preferred printed guides, and 9% preferred personal tutorials.
- Finally, we hoped that the addition of web-based training would increase the number of users participating in electronic resource instruction offered by the NIH Library.

EVALUATING METHODS FOR DELIVERING WEB-BASED TRAINING

With an understanding of our users' need for training that would provide a convenient way of learning how to use library resources, the Library's Instruction Team began the process of implementing a program by first evaluating the methods for delivering web-based training. Feedback from our users indicated they did not want complicated or time-consuming learning modules – and that they preferred quick overviews to get them started using the resource right away. We also took into consideration the needs of our team members who would be developing the web-based training program. Because of time constraints and relatively little experience with web-based instructional design, we decided we would need software that would afford us a relatively short learning curve and low maintenance schedule.

To adequately evaluate methods for delivering web-based training, we developed a list of features we deemed necessary to satisfy both the users' and developers' requirements. These features included:

For the user:

- 24/7 access for users
- Accessible from any computer
- Easy navigation
- Just-on-time delivery of training

- Fun and interactive experience
- Ability to give feedback and ask questions
- ADA compliant (a requirement for federal government web sites)

For the Library:

- Relatively short learning curve for developers
- Compatible software across computer platforms
- Company infrastructure for ongoing support
- Web-based software
- Ability to be maintained on Library's server
- Easy to update content
- Affordable cost

There are many methods and techniques for delivering web-based instruction. We first identified essentially three types of delivery methods. They included: 1) web pages written in HTML, 2) web pages written with authoring tools that incorporate languages such as Java and JavaScript to develop complex interactive web pages (i.e. Macromedia Authorware, ViewletBuilder), and 3) "off- the-shelf" coursebuilding software that is used to create training modules (i.e. Toolbook, Digital Trainer, Blackboard). After weighing the pros and cons of each category, we decided that the second category of web authoring tools would be most appropriate for the needs of both the user and the developer. While products in the third category, such as Blackboard offer a greater number of interactivity features such as quizzes and student tracking capability, we felt that this type of software was too complex for our needs at the time. Finally, after reading reviews (1-14,17,18) and talking to colleagues in other libraries, we decided to evaluate the following web authoring tools: Macromedia's Authorware, Macromedia's CourseBuilder and Qarbon's ViewletBuilder.

Several members of our team who have advanced web authoring skills evaluated the Macromedia products. Although these products are highly sophisticated and possess many advanced features, we agreed that these products would be more suited for creating complex training modules – something our users have indicated they do not have time for. We also acknowledged that we would need to invest a significant amount of time and money to train team members on how to use the Macromedia tools, and this was not a realistic goal for a team-based activity at the time. We finally decided to use Qarbon's ViewletBuilder as it met all of the essential requirements, particularly with regard to ease of use for the user and the ability to deliver point-of-need instruction to the user. We launched a pilot tutorial or "viewlet" as the tutorials are called, and sought feedback from library staff. With overwhelming positive feedback from staff, we implemented a plan to produce a series of tutorials based on user demand.

THE VIEWLET

Qarbon's ViewletBuilder is an intuitive interface that quickly enables production of a fairly rich animation. Creating a viewlet starts with creating a series of screenshots. Thumbnails of the screenshots are displayed within ViewletBuilder.

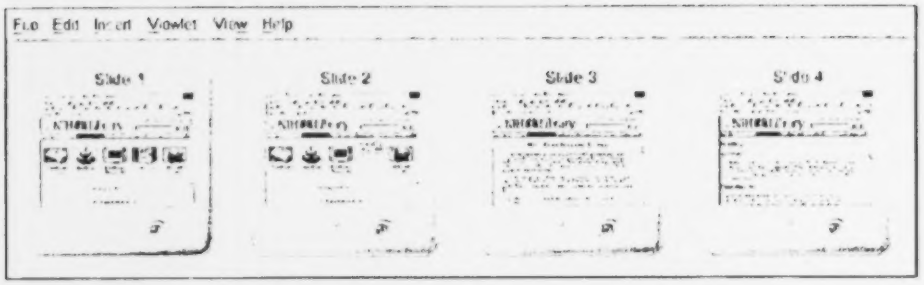

Figure 1 – Thumbnails within ViewletBuilder

These screenshots are then annotated by the use of "notes" and "balloons". Notes are used to give general information about a screen, and are graphically represented by a colored square anchored by a pushpin. Balloons point to a section of the screen and can be used to call attention to a specific part of a screen, for instance a search box where type would be entered or a button that would execute an action. Balloons can be configured to "point" from a variety of positions along its edges. Balloons and notes can be modified by changing their sizes, colors, shapes, and the type format.

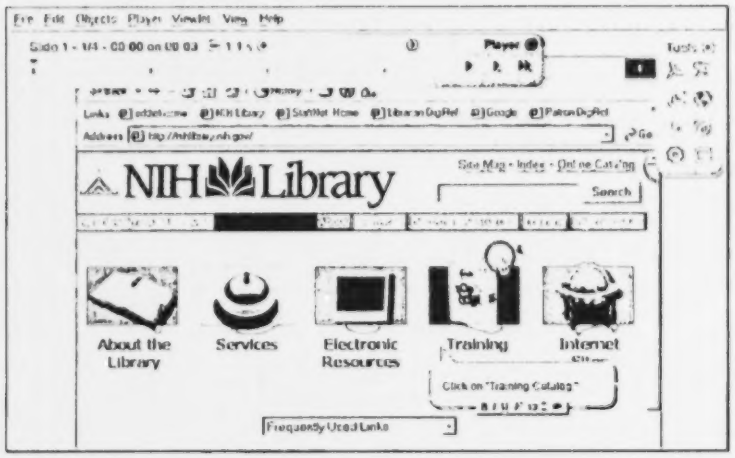

Figure 2 – Configuring a balloon in ViewletBuilder

Feedback from our pilot study yielded many helpful suggestions in terms of formatting considerations for our developers. Suggestions from our pilot users prompted us to standardize the viewlets by adding a first slide displaying the Library's logo, followed by a series of slides that explain how the navigation buttons work on the viewlet's control panel. In addition, we have personalized the look of the viewlets by using our own skin, or branding, rather than the Qarbon logo. By creating a skin, specific colors can be chosen, and a logo or graphic added that is displayed the entire time the viewlet is running.

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The use of cursor movements greatly enhances the viewlets when demonstrating how to navigate through web pages. For our developers, getting the cursor movement correct was the steepest part of the learning curve. As seen below in Figure 3, the cursor appears within a green circle in the screenshots. You will also notice a green and red line, and a red circle. The green circle indicates where the cursor appears on the slide in the viewlet. The green and red line is the cursor path, and the red circle indicates the cursor location on the next slide in the viewlet. This enables a smooth transition between slides.

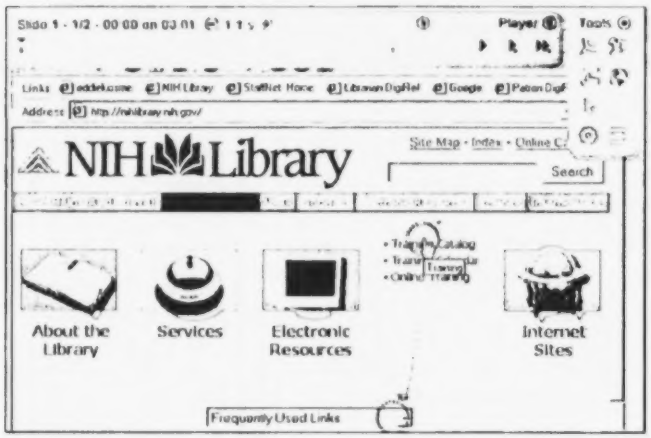

Figure 3 – Cursor paths in ViewletBuilder

Viewlets can be made more interactive with the use of click zones. The click zones allow creation of self-tests for viewers. Messages are generated based on mouse click location. If the viewer clicks the correct section of the screen, they will get a success message. If the clicked location is incorrect, they will see an error message. Another way to build a self-test for viewers is to incorporate a text zone within a slide. The text zone requires a typed response from the viewer. You may specify how many chances the viewer has to try to get the right response. If the viewer supplies the right response, or the specified number of attempts is reached, the viewlet moves on. We plan on implementing this feature in future viewlets.

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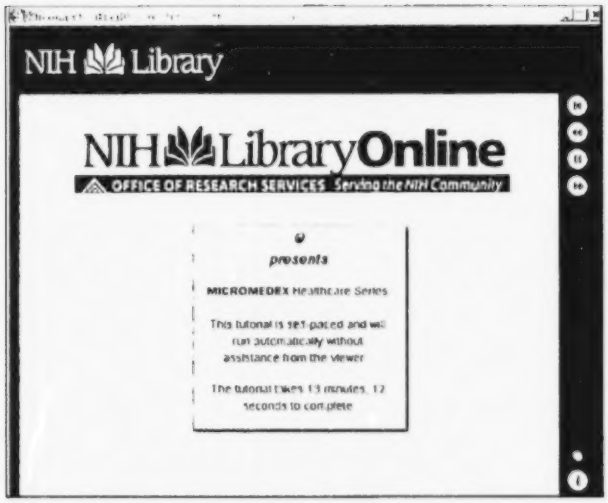
NIH Library
NIH LibraryOnline
OFFICE OF RESEARCH SERVICES Serving the NIH Community
presents
MICROMEDEX Healthcare Series
This tutorial is set-paced and will run automatically without assistance from the viewer.
The tutorial takes 13 minutes, 12 seconds to complete

Figure 4 – First slide of a viewlet

The resulting animation is easily used by the viewer. There is a control panel that allows the viewer to pause the viewlet, advance it slide by slide manually, or go back to the beginning. The buttons mimic standard buttons on electronic devices such as CD players and VCRs. The timing of the progression of slides is automatically calculated based on the number of words in the balloons and notes, cursor movements, and any manual adjustments to slide duration. The viewer can control the progression in two ways: by pausing the viewlet with the button at the top right, then advancing the slides one at a time by clicking on the Forward button. The second way is via a pause zone, a feature we do not use. A pause zone will pause the viewlet and insert a button onto the slide, which the viewer must click to continue.

Users can also be directed to other web pages via live URLs embedded in the viewlet. We use this functionality to direct users to a survey that gives us feedback on the viewlet for the resource being discussed, and also solicit suggestions for other viewlets that would be useful.

For the most part, viewlets pose little technological strain on the user. No plug-ins are needed for viewing, and the viewlet played is a streaming file. However, viewlets do not run well on Macs, as they are a Java application and the Mac – Java relationship is not reliable at present. Developers at Qarbon are working with Apple to create a new version of ViewletBuilder for the MacOS X (16).

Narration adds an element that has proven popular with our users. ViewletBuilder prompts the viewer to read the text that is on the balloon or note. The narration not only adds to the experience of watching the viewlet, but also enables the Library, as a federal agency, to comply with Section 508 of the Rehabilitation Act of 1973 by supplying narration for material that is dependant on visual ability. Section 508 establishes standards to ensure electronic and information technology developed, procured, maintained, or used by the Federal government be accessible to people with disabilities (17). Generally, this refers to the use of text labels or descriptors for graphics and certain format elements, but also addresses the usability of

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multimedia presentations, image maps, style sheets, scripting languages, applets and plug-ins, and electronic forms.

EVALUATING THE VIEWLETS

To date, we have received many positive comments that support our effort to develop web-based training that meets the users' on their terms. As mentioned previously, at the end of each viewlet we ask our users to complete a survey that provides us with feedback on the tutorial they have just viewed. Notable in the feedback are comments regarding how quick and easy the tutorials are to follow. Comments include ones like these:

> "So helpful and clear! I spent just 10 minutes and I'm able to use Reference Manager easily!"

> "The tutorial was very well presented and extremely informative in terms of covering the basics…I look forward to using this tool as a part of my research."

We also use statistics gathered from our web site statistical reports to analyze usage of the viewlets. These statistics show the overall picture of tutorial usage as well as specific trends, such as the most heavily used tutorials. Currently, we have 10 viewlets posted on the Training Catalog page of the NIH Library's web site at http://nihlibrary.nih.gov/training.htm. The most popular three viewlets are: 1) Reference Manager, 2) Cited Reference Searching, and 3) How to Order Documents via PubMed.

While statistics give us much information about overall use of the viewlets, there is still a great deal we must learn about the quality of the users' experience while viewing a tutorial. In the future, we plan to use evaluative tools, such as usability testing and focus groups to obtain a greater understanding of the users' actual experience while watching a viewlet, as well as information on the impact of the tutorials on our users' work productivity.

CONCLUSION

With web-based training, the NIH Library has been able to deliver 24/7 training that is both convenient and relevant to the users' information needs in a research environment. We now reach more users as shown by statistics gathered for training delivered electronically or outside the Library. Fifty-one individuals attended training sessions held outside the Library in the Fall of 2000 before the introduction of online training, while 768 received training online or outside the Library during the same period in 2001. We believe this increase of 1406% in training sessions demonstrates a significant and improved return on investment for the Library. A positive impact can be seen not only in the use of the tutorials but also in other services, including increased traffic to electronic resources on our web site.

In the future, we will plan to pursue activities in three major areas. First, as previously mentioned, we plan to conduct usability studies in order to gain a greater understanding of our users' experience with the tutorials. Second, we plan to continue investigating web authoring technologies as they evolve for possible consideration as improved delivery methods of online

training, and third, we plan to further integrate these point-of-need tutorials with other services and resources that are provided via the Library's web site. One of these services is digital reference service, which we are currently piloting with our users. With its ability to push specific web pages to users, digital reference service would be a natural and logical vehicle for providing real-time, personalized assistance that the tutorials are designed to provide.

Finally, we believe the NIH Library Instruction Team has made a significant contribution to achieving one of the Library's strategic goals of providing customized information services and transparent access to the most relevant information for its users. We have recognized that while information itself is essential, the format and mode of delivery are equally as important. Therefore, the NIH Library Instruction Team will continue to play a critical role in developing innovative ways of delivering training services that provide responsive and customized information services to NIH researchers and scientists.

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